State Board of Education Approved
February 2002

LEISURE CRAFT: SYSTEMS

Leisure Craft: Systems is a course that prepares students for entry-level positions or advancement in the leisure CRAFT career paths. The course of study focuses on motorcycles, watercraft, all-terrain vehicles (ATV), jet skies, outboard motor boats, and garden vehicles. Content provides students the opportunity to acquire skills relating to safety, shop operations, and basic technician skills in brake systems, suspension systems, steering systems, tilt and trim systems, and transmission systems relating to leisure CRAFT. Students will perform inspections, tests, and measurements for diagnosis and perform needed repairs. Education and experience simulate the leisure craft service industry operations through the use of training aids and modules and offer school-based and work-based learning opportunities.

Prerequisite: Transportation Core
Algebra I or Math for Technology II (may be concurrent)

Recommended Credit: 1 - 2

Recommended Grade Level: $10^{th,}$ 11^{th} or 12^{th}

Note: Standards 1 through 7 apply for 1 credit. Standards 8 through 9 apply for an additional 1 credit.
Standards 8 through 9 apply to outboard engine service technology.

LEISURE CRAFT: SYSTEMS
STANDARDS

1.0 Students will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community, and workplace.

2.0 Students will demonstrate safety practices pertinent to leisure CRAFT, including Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA)) requirements.

3.0 Students will apply communication, mathematics, and science knowledge and skills to leisure CRAFT.

4.0 Students will evaluate strategic diagnostic procedures for leisure CRAFT.

5.0 Students will properly test, diagnose, service, and repair brake systems connected with leisure CRAFT.

6.0 Students will properly test, diagnose, service, and repair suspension systems connected with leisure CRAFT.

7.0 Students will properly test, diagnose, service, and repair transmissions connected with leisure CRAFT.

8.0 Students will properly test, diagnose, service, and repair steering systems used in leisure CRAFT.

9.0 Students will analyze system interrelationships within operation and service of power-output systems.

10.0 Students will demonstrate communication skills required in the leisure craft service industry.

11.0 Students will demonstrate interpersonal and employability skills required in the leisure craft service industry.

LEISURE CRAFT: SYSTEMS

STANDARD 1.0

Students will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community, and workplace.

LEARNING EXPECTATIONS

The student will:
1.1 Develops a plan for self-improvement.
1.2 Participate in SkillsUSA-VICA as an integral part of classroom instruction.
1.3 Comprehend client expectations.
1.4 Develop a working relationship with a mentor.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:
1.1 Recognizes stress factors.
1.2.A Applies the points of the creed to personal and professional situations.
1.2.B Reviews professional journals and develops a 3 to 5 minute presentation.
1.3.A Develops a customer satisfaction card and implements a plan to gather information from responses.
1.4.A Develops a schedule to provide time to work with a mentor.
1.4.B Keeps a record of time and activities performed while working with a mentor.

SAMPLE PERFORMANCE TASKS

- Create a leadership inventory and use it to conduct a personal assessment to identify stress factors or sources.
- Participate in various SkillsUSA-VICA programs and/or competitive events.
- Measure and modify short-term goals.
- Implement an annual program of work.
- Identify a mentor and establish a relationship with the mentor. Develop a plan using time management skills to spend time with the mentor. Job shadow or internship experiences should be developed and recorded.

INTEGRATION LINKAGES

SkillsUSA-VICA, *Professional Development Program,* SkillsUSA-VICA, Communications and Writing Skills, Teambuilding Skills, Research, Language Arts, Sociology, Psychology, Math, Math for Technology, Applied Communications, Social Studies, Problem Solving, Interpersonal Skills, Employability Skills, Critical-Thinking Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Chamber of Commerce, Colleges, Universities, Technology Centers, and Employment Agencies

LEISURE CRAFT: SYSTEMS

STANDARD 2.0

Students will demonstrate safety practices pertinent to leisure CRAFT, including Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA)) requirements.

LEARNING EXPECTATIONS

The student will:

2.1 Implement safety procedures established by the Occupational Safety & Health Administration (OSHA) and Environmental Protection Agency (EPA).
2.2 Analyze and categorize safety and health hazards and their prevention in the leisure CRAFT industry.
2.3 Exhibit acceptable dress and personal grooming identified by the leisure CRAFT industry.
2.4 Demonstrate first aid practices.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

2.1.A Establishes and maintains a safe and healthy working environment.
2.1.B Distinguishes and employs measures to prevent and eliminate contaminants and ensure ecological, chemical, and physical safety.
2.2.A Maintains leisure craft service laboratory in a safe and clean condition.
2.2.B Performs proper lifting procedures, physical or rigging, presented in leisure CRAFT.
2.2.C Utilizes protective clothing and breathing equipment necessary for the leisure CRAFT industry.
2.2.D Demonstrates how to level and block equipment and avoid hot components in the leisure CRAFT industry.
2.3 Compares and contrasts acceptable dress and personal grooming for specific jobs in the leisure craft service industry.
2.4 Administers simulated basic first aid procedures including treating burns and cuts and administering the Heimlich Maneuver.

SAMPLE PERFORMANCE TASKS

- Conduct a safety and health inspection and identify any potential hazards.
- List causes of most common accidents and outlines a safety prevention program.
- Participate in the Occupational Health and Safety competitions with SkillsUSA-VICA.
- Outline a safety management program.
- Develop emergency policies for the leisure craft service laboratory.
- Correctly move a piece of leisure craft from one location to another using rigging properly.
- Locate a piece of leisure craft by leveling and blocking for safe work.
- Role-play proper procedures for treating burns and cuts and administering the Heimlich maneuver according to standards set forth by the American Red Cross.

INTEGRATION LINKAGES

Computer Skills, Art, Math, Math for Technology, Geometry, Chemistry, Science, Health, Manipulative Skills, Communication Skills, Teamwork Skills, Language Arts, Research and Writing Skills, Decision-Making Skills, Critical Thinking Skills, Secretary's Commission on Achieving Necessary Skills, (SCANS), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Tennessee Occupational Safety and Health Administration (TOSHA), SkillsUSA-VICA, American Red Cross

LEISURE CRAFT: SYSTEMS

STANDARD 3.0

Students will apply communication, mathematics, and science knowledge and skills to leisure CRAFT.

LEARNING EXPECTATIONS

The student will:

3.1 Examine how physics concepts apply to leisure CRAFT.
3.2 Explore the application of fundamental laws of hydraulics.
3.3 Analyze the characteristics and properties of liquids as applied to leisure CRAFT.
3.4 Perform mathematical calculations and measurements commonly used in leisure CRAFT.
3.5 Communicate findings as related to mathematics and science knowledge and skills related to diagnosis of problems in leisure CRAFT.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

3.1.A Correlates the following concepts with their role in leisure CRAFT:

- mass
- force
- acceleration
- energy
- heat
- temperature
- pressure
- friction
- coefficient of friction
- inertia
- momentum
- speed
- work
- torque
- power

3.1.B Examines the effects of weight and speed on braking and stopping.
3.1.C Explores thermal expansion of fluids, gases, and solids.
3.1.D Analyzes Ohm's law of electricity and determines its effects on sensors within leisure craft service.
3.2 Interprets and applies the laws of hydraulics as applied to leisure CRAFT.
3.3.A Assesses the characteristics of liquids used in leisure CRAFT.
3.3.B Comprehends Paschal's law of liquids and determines its effects on leisure CRAFT.
3.4.A Compares readings taken from leisure craft service with manufacturer specifications.
3.4.B Selects the appropriate measurement tool for the requirements of a given measurement.
3.4.C Reads and interprets data correctly from measurement tools used in the leisure CRAFT industry.
3.4.D Calculates torque and horsepower of engines used in leisure CRAFT.
3.4.E Uses flat rate and hours earned to calculate technician's pay.
3.4.F Uses and converts common units of measurement across measurement systems (metric and English, Celsius and Fahrenheit).
3.5.A Illustrates the applications of basic physics concepts such as Ohm's law and Paschal's law in leisure craft operating systems
3.5.B Documents measurements and findings in a journal for future reference.

3.5.C Maintains a record of earning based on calculations of flat rate and hours earned on services provided.

SAMPLE PERFORMANCE TASKS

- Develop an integrated project with a chemistry class to show the chemical breakdown of fluids such as brake fluid, motor oil, antifreeze, power steering, transmission fluid, and battery acid. Develop a presentation to share with school and community groups as why fluids must be changed regularly in leisure craft vehicles.
- Develop an integrated project with a physics class to demonstrate principles of physics incorporated in the operating systems of leisure craft vehicles.
- Develop a personal income plan by projecting work on a typical day in the leisure craft service facility by calculating flat rate and hours earned for the technician's pay.

INTEGRATION LINKAGES

Mathematics, Physics, Science, Electronics, Chemistry, Language Arts, Precision Measuring, Communication Skills, Teamwork Skills, Computer Skills, Research and Writing Skills, Problem Solving, Interpersonal Skills, Employability Skills, Critical Thinking Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Tennessee Occupational Safety and Health Administration (TOSHA), SkillsUSA-VICA

LEISURE CRAFT: SYSTEMS

STANDARD 4.0

Students will evaluate strategy based diagnostic procedures for leisure CRAFT.

LEARNING EXPECTATIONS

The student will:
4.1 Implement strategic diagnostic procedures.
4.2 Conduct preventative maintenance on leisure craft service.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:
4.1 Employs strategic based diagnostic procedure.
Verifies the problem, listens to the customer and validates the problem.
Defines the problem, location, system, and nature.
Isolates the problem using diagnostic tools and visual evaluations.
Validates components and determines the root cause of the problem.
Repairs the problem, cleans, replaces, or installs components.

4.2.A Follows procedures in the manufacturer's service manual to include but not limited to inspecting mechanical components, lubricating moving parts, adjusting belt tensions, adjusting linkages, and aligning pulleys and shafts.

4.2.B Conducts a walk around inspection and documents findings related to the service or possible liability of maintaining leisure craft. Inspection to include but not limited to:

- tires (pressure, tread, balance)
- wheels
- spokes
- shocks
- hoses
- levers
- clutch adjustments
- lights
- cables
- linkages

4.2.C Documents preventative maintenance procedures completed and records data.

SAMPLE PERFORMANCE TASKS

- Given a case scenario the student follows procedures in the manufacturer's service manual to perform routine preventative maintenance on a specific piece of leisure craft service. The student writes a service order and calculates the flat rate and hours earned to determine technician's pay for the job. Students evaluate technical writing on service orders and determine the need for additional information to maximize liability protection and wages earned by the technician.
- Given a case scenario the student implements the steps to diagnose and repair a problem in a component of a leisure craft system. The student writes a service order and calculates the flat rate and hours earned to determine technician's pay for the job. Students evaluate technical writing on service orders and determine the need for additional information to maximize liability protection and wages earned by the technician.
- Using training aids the instructor inputs faults and problems in the electrical system, the students then troubleshoots to determine the problem and makes necessary repairs. The

student writes a service order and calculates the flat rate and hours earned to determine the technician's pay for the job.

INTEGRATION LINKAGES

Mathematics, Physics, Science, Precision Measuring, Communication Skills, Teamwork Skills, Computer Skills, Research and Technical Writing Skills, Problem Solving, Interpersonal Skills, Employability Skills, Critical Thinking Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Tennessee Occupational Safety and Health Administration (TOSHA), SkillsUSA-VICA

LEISURE CRAFT: SYSTEMS

STANDARD 5.0

Students will properly test, diagnose, service, and repair brake systems connected with leisure CRAFT.

LEARNING EXPECTATIONS

The student will:

5.1 Analyze hydraulic brake systems.
5.2 Analyze drum brake systems.
5.3 Analyze disc brake systems.
5.4 Analyze antilock brake systems.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

5.1.A Inspects, repairs, or replaces master cylinders and lines of the hydraulic brake system.
5.1.B Inspects and replaces switches and valving devices.
5.1.C Follows safety guidelines and regulations for brake fluids.
5.2.A Removes, cleans, and inspects drum brake assemblies.
5.2.B Removes, inspects, and installs wheel cylinders.
5.2.C Replaces wheel bearings and race.
5.2.D Inspects vacuum supply to vacuum-type power booster.
5.3.A Removes, cleans, and inspects disc brake system components.
5.3.B Diagnoses rotor wear and determines necessary action according to manufacturer's recommendations.
5.3.C Diagnoses caliper mountings and slides for wear and damage and determines necessary action.
5.4.A Analyzes antilock brake (ABS) components.
5.4.B Analyzes wiring harnesses and connectors.
5.4.C Diagnoses and tests speed sensors and circuits including voltage output, resistance, shorts to voltage/ground, and frequency data.

SAMPLE PERFORMANCE TASKS

- Diagnose poor stopping, pulling, or dragging concerns caused by problems in the hydraulic system.
- Inspect brake lines, brake pads, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging, or wear; tightens loose fittings and supports; and determines necessary action.
- Install wheel and torque lug nuts and makes final checks and adjustments.
- Check parking brakes cables and components for wear, rusting, binding, and corrosion; cleans, lubricates and replaces as needed.
- Test pedal-free travel with and without engine running and checks power assist operation.
- Remove and replace wheel bearings and race.
- Resurface brake rotor.

- Remove and replace brake caliper.

- Using case scenarios, follow strategy based diagnostic procedure to:
  - Verify the complaint.
  - Define the problem.
  - Isolate the problem.
  - Validate the problem.
  - Make the repair.
  - Test the repair.
- Complete a work order using technical writing skills and calculate salary per job based on flat rate and hours earned.

INTEGRATION LINKAGES

Mathematics, Physics, Science, Precision Measuring, Language Arts, Communication Skills, Teamwork Skills, Computer Skills, Research and Writing Skills, Problem Solving, Interpersonal Skills, Employability Skills, Critical Thinking Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Tennessee Occupational Safety and Health Administration (TOSHA), SkillsUSA-VICA

LEISURE CRAFT: SYSTEMS

STANDARD 6.0

Students will properly test, diagnose, service, and repair suspension systems connected with leisure CRAFT.

LEARNING EXPECTATIONS

The student will:

6.1 Perform diagnostic procedures on steering systems on leisure craft.
6.2 Test, diagnose, service, and repair front and rear suspension systems on leisure craft.
6.3 Set front and rear wheel alignment angles.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

6.1.A Cleans, inspects, adjusts, and repairs power and manual steering gear boxes.
6.1.B Cleans, inspects, adjusts, and repairs power and manual rack and pinion steering.
6.1.C Inspects and repairs steering columns.
6.1.D Inspects and repairs steering linkage components.
6.1.E Inspects, repairs, and replaces power steering pumps.
6.2.A Diagnoses conventional and electronic front and rear suspension systems and takes necessary actions.
6.2.B Inspects, repairs, and replaces spokes, tires, wheel spindles, and bearings.
6.2.C Calculates tire wear.
6.2.D Inspects and replaces shock absorbers and stabilizer bars.
6.2.E Inspects and replaces forks.
6.3.A Sets correct alignment angles on front wheels.
6.3.B Rotates and balances tire and wheel assemblies.
6.3.C Diagnoses and determines necessary action for tire wear patterns and wheel/tire vibration, shimmy, and noise.

SAMPLE PERFORMANCE TASKS

- Diagram a steering and suspension system, identifying the forces and principles at work in each point in the system.
- Develop a presentation on the laws of hydraulics as applied to the operation of a power steering pump.
- Remove and replace manual or power rack and pinion steering gear; inspect mounting bushings and brackets.
- Inspect, replace, and adjust tie rod ends, tie rod sleeves, and clamps.
- Using case scenarios follow strategy based diagnostic procedure to verify the complaint, define the problem, isolate the problem, validate the problem, make the repair, and test the repair. Complete a repair order using technical writing skills and calculate salary earnings based on flat rate and hours earned contingent to the repair order description and manufacturer allowances for each item on the work order. Calculate manufacturer labor operation time used in the diagnostic process.

- Remove and replace shock absorbers.
- Remove, pack and replace wheel bearings.
- Remove and replace a wheel.
- Rotate and balance tires and wheel assemblies.
- Set alignment angles on wheels.
- Comprehend and communicate oral and written information typically occurring in leisure craft suspension and steering service.
- Disable and enable components of the suspension system.

INTEGRATION LINKAGES

Mathematics, Physics, Science, Precision Measuring, Language Arts, Communication Skills, Teamwork Skills, Computer Skills, Research and Writing Skills, Problem Solving, Interpersonal Skills, Employability Skills, Critical Thinking Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Tennessee Occupational Safety and Health Administration (TOSHA), SkillsUSA-VICA

LEISURE CRAFT: SYSTEMS

STANDARD 7.0

Students will properly test, diagnose, service, and repair transmissions connected with leisure CRAFT.

LEARNING EXPECTATIONS

The student will:
7.1 Perform diagnostic procedures on transmissions in leisure craft vehicles.
7.2 Make adjustments to components of the transmission system.
7.3 Comprehend the principles of operation of mechanical-shifting power-output systems.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:
7.1.A Inspects drive shafts and determines necessary actions.
7.1.B Inspects fluids and determines necessary actions.
7.2.A Adjusts clutches, cables, belts, linkages, and pulleys.
7.2.B Calculates gear ratio.
7.2.C Inspects and repairs transmission linkage components.
7.3.A Evaluates gear trains and demonstrates the shifting capabilities of each, including positioning for forward, reverse, and neutral configurations.
7.3.B Comprehends tiller and remote shifting controls.
7.3.C Comprehends the design and operation of electrical shift systems.
7.3.D Discusses and applies the applications of gear ratios in terms of engines and propellers.
7.3.E Examines clutch designs and operation.
7.3.F Analyzes protective mechanisms for connecting the propeller and shaft.

SAMPLE PERFORMANCE TASKS

- Using case scenarios follow strategy based diagnostic procedure to verify the complaint, define the problem, isolate the problem, validate the problem, make the repair, and test the repair. Complete a repair order using technical writing skills and calculate salary earnings based on flat rate and hours earned and based on the repair order description and manufacture allowances for each item on the work order. Calculate manufacturer labor operation time used in the diagnostic process.
- Evaluate clutch plates, cable clutch, and sprockets.
- Research the progression of power-output systems through system interrelationships to propel the boat through the water.

INTEGRATION LINKAGES

Mathematics, Physics, Science, Precision Measuring, Language Arts, Communication Skills, Teamwork Skills, Computer Skills, Research and Writing Skills, Problem Solving, Interpersonal Skills, Employability Skills, Critical Thinking Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA),

Environmental Protection Agency (EPA), Tennessee Occupational Safety and Health Administration (TOSHA), SkillsUSA-VICA

LEISURE CRAFT: SYSTEMS

STANDARD 8.0

Students will properly test, diagnose, service, and repair steering systems used in leisure CRAFT,

LEARNING EXPECTATIONS

The student will:

8.1 Perform diagnostic procedures on steering system components used with watercraft specific to outboard engines.
8.2 Perform diagnostic procedures on mounted cable steering systems used with watercraft specific to outboard engines.
8.3 Test, diagnose, service, and repair cable over pulley steering systems used with watercraft specific to outboard engines.
8.4 Test, diagnose, service, and repair rotary steering systems used with watercraft specific to outboard engines.
8.5 Test, diagnose, service, and repair rack and pinion systems used with watercraft specific to outboard engines.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

8.1.A Inspects and repairs steering columns.
8.1.B Inspects repairs, and replaces cables, clutches and fluids in steering systems used in watercraft specific to outboard engines.
8.1.C Cleans, inspects, adjusts, and repairs power and manual steering gear boxes.
8.2 Test, diagnose, service, and repair hydraulic steering systems used with watercraft specific to outboard engines.
8.3.A Test, diagnose, service, and repair mounted cable steering systems used with watercraft specific to outboard engines.
8.3.B Test, diagnose, service, and repair cable over pulley steering systems used with watercraft specific to outboard engines.
8.4 Test, diagnose, service, and repair rotary steering systems used with watercraft specific to outboard engines
8.5 Cleans, inspects, adjusts, and repairs power and manual rack and pinion steering systems used with watercraft specific to outboard engines.

SAMPLE PERFORMANCE TASKS

- Develop a presentation on the laws of hydraulics as applied to the operation of a power steering pump.
- Remove and replace manual or power rack and pinion steering gear; inspect mounting bushings and brackets.
- Inspect, replace, and adjust tie rod ends, tie rod sleeves, and clamps.

- Using case scenarios follow strategy based diagnostic procedure to verify the complaint, define the problem, isolate the problem, validate the problem, make the repair, and test the repair. Complete a repair order using technical writing skills and calculate salary earnings based on flat rate and hours earned contingent to the repair order description and manufacturer allowances for each item on the work order. Calculate manufacturer labor operation time used in the diagnostic process.
- Diagram a steering system, identifying the forces and principles at work in each point in the system.

INTEGRATION LINKAGES

Mathematics, Physics, Science, Precision Measuring, Language Arts, Communication Skills, Teamwork Skills, Computer Skills, Research and Writing Skills, Problem Solving, Interpersonal Skills, Employability Skills, Critical Thinking Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Tennessee Occupational Safety and Health Administration (TOSHA), SkillsUSA-VICA

LEISURE CRAFT: SYSTEMS

STANDARD 9.0

Students will analyze system interrelationships within operation and service of power-output systems.

LEARNING EXPECTATIONS

The student will:

9.1 Analyze the transference of mechanical output of the engine in relations to the watercraft moving through the water.
9.2 Comprehend the functions of mid section and lower unit of the outboard engine.
9.3 Analyze major components of propeller assemblies relating to various types of watercraft.
9.4 Service and repair power-output systems.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

9.1A Comprehends the relationship of engine performance along a drive shaft, through a gear case to turn a propeller.
9.1.B Compare a propeller and how it works to the engine's water pump.
9.1.C Comprehends how water displacement provides the boat with controlled movement through the water.
9.2.A Selects and discusses major components of power-output systems.
9.2.B Discusses function of each component and its role in the production and output of controlled, directed power to propel the watercraft.
9.2.C Compares various water-inlet and exhaust-port designs, shifting and non-shifting gear cases, and different types of propellers.
9.3.A Discusses the role of each component and the impact of design variations on power output.
9.3.B Determines the appropriateness of design variations for specific watercraft applications.
9.3.C Comprehends the importance of protecting the propeller from damage through the use of shear pins and special hubs.
9.3.D Analyzes intact seals and bearings and explains the importance of maintaining each.
9.4.A Adjusts fuel and oil and checks for leaks and determines necessary action.
9.4.B Performs repairs indicated by inspection and testing.

SAMPLE PERFORMANCE TASKS

- Brainstorm the importance of protecting and maintaining top performance of the propeller. Discuss the source of possible damage, the effects on watercraft performance, and related service procedures. Use listening, reasoning, seeing things in the mind's eye in relation to system interrelationships.
- Provide a variety of designs of propellers, brackets, water-inlet and exhaust-ports, shifting and non-shifting gear cases. Have students analyze each and determine the best for specific needs in performance.
- Using case scenarios follow strategy based diagnostic procedure to verify the complaint, define the problem, isolate the problem, validate the problem, make the repair, and test the

repair. Complete a repair order using technical writing skills and calculate salary earnings based on the repair order description and manufacture allowances for each item on the work order. Calculate manufacturer labor operation time used in the diagnostic process.

- Demonstrate the procedure for removing and replacing propellers.
- Demonstrates the procedures for checking rpm on propellers.

INTEGRATION LINKAGES

Mathematics, Physics, Science, Precision Measuring, Language Arts, Communication Skills, Teamwork Skills, Computer Skills, Research and Writing Skills, Problem Solving, Interpersonal Skills, Employability Skills, Critical Thinking Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Tennessee Occupational Safety and Health Administration (TOSHA), SkillsUSA-VICA

LEISURE CRAFT: SYSTEMS

STANDARD 10.0

Students will demonstrate communication skills required in the leisure craft service industry.

LEARNING EXPECTATIONS

The student will:

10.1 Communicate and comprehend oral and written information typically occurring in leisure craft service facility.
10.2 Solve leisure CRAFT problems and make decisions using a logical process.
10.3 Use teamwork skills to accomplish goals, solve problems, and manage conflict within groups.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

10.1.A Interprets and uses written information in common job formats, such as tables, charts, and reference materials and manuals relating to leisure CRAFT.
10.1.B Interprets and uses graphical information such as blueprints, electrical schematics, process control schematics, automotive flow charts, and other leisure craft diagrams.
10.1.C Uses electronic resources to obtain service and other information relating to leisure CRAFT.
10.1.D Analyzes information obtained form various sources to determine a diagnostic approach.
10.1.E Communicates clearly and appropriately in oral and written form.
10.1.F Interprets a repair order written for leisure craft service repairs.
10.2.A Develops a hypothesis regarding the cause of a problem in a leisure craft.
10.2.B Tests the hypothesis to determine the solution to the leisure craft service problem.
10.2.C Creates, evaluates, and revises as needed a plan to resolve a problem.
10.2.D Completes strategy based diagnostic procedure to verify the complaint, define the problem, isolate the problem, validate the problem, make the repair, and test the repair pertaining to leisure craft systems.
10.3.A Serves in each of the functional roles of a team performing leisure CRAFT.
10.3.B Compares ethical and non-ethical workplace attitudes.
10.3.C Demonstrates appropriate and positive examples of giving and accepting criticism.
10.3.D Modifies behavior or revises work based on appropriate criticism.
10.3.E Manages a team and evaluates others.
10.3.F Evaluates the role of the leisure craft service team within the organizational system of a dealership or independent shop.

SAMPLE PERFORMANCE TASKS

- Complete a leisure craft repair order.
- Use reference materials to determine procedures for diagnosing and testing leisure craft systems.
- Work as a team member to develop a diagnostic strategy.
- Use blueprints and diagrams to execute a task.

INTEGRATION LINKAGES

Mathematics, Physics, Science, Precision Measuring, Language Arts, Communication Skills, Teamwork Skills, Computer Skills, Research and Writing Skills, Problem Solving, Interpersonal Skills, Employability Skills, Critical Thinking Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Tennessee Occupational Safety and Health Administration (TOSHA), SkillsUSA-VICA

LEISURE CRAFT: SYSTEMS

STANDARD 11.0

Students will demonstrate interpersonal and employability skills required in the leisure craft service industry.

LEARNING EXPECTATIONS

The student will:

11.1 Infer relationships between work ethics and organizational and personal job success for leisure craft systems service.
11.2 Develop customer service skills.
11.3 Maintain a neat and orderly leisure craft systems service work area.
11.4 Assess implications of diversity for communities and workplaces.
11.5 Explore supervisory and management roles in leisure craft dealerships or independent shops.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

11.1.A Comprehends the concept and the relationship of work ethics and success in the leisure craft systems service facility."
11.1.B Assesses the potential impact of an individual's work ethic on an organizational system within the leisure craft systems service industry.
11.1.C Infers the relationship between work ethics and personal job success.
11.2 Maximizes customer service opportunities.
11.3.A Keeps work area and tools organized and free from clutter.
11.3.B Cleans work area and leisure craft systems service equipment according to shop and EPA standards.
11.3.C Deduces the correlation between a clean orderly work environment and successful and efficient job performance.
11.4.A Points out benefits and problems that may arise from diversity in leisure craft systems from various manufacturers.
11.4.B Engages in a team negotiation activity.
11.5.A Determines personal proficiency in employability behavior competencies.
11.5.B Demonstrates personal proficiency in management skill competencies.
11.5.C Assesses the benefits of incorporating time management principles into work in the leisure craft service industry.

SAMPLE PERFORMANCE TASKS

- Maintain an orderly work area.
- Lead a problem-solving team.
- Consistently arrive at class on time.
- Participate in an internship in a dealership or independent shop.
- Resolve an interpersonal conflict in the classroom.
- Manage a project and evaluate yourself as a leader and evaluate other team members.

INTEGRATION LINKAGES

Mathematics, Physics, Science, Precision Measuring, Language Arts, Communication Skills, Teamwork Skills, Computer Skills, Research and Writing Skills, Problem Solving, Interpersonal Skills, Employability Skills, Critical Thinking Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Tennessee Occupational Safety and Health Administration (TOSHA), SkillsUSA-VICA

LEISURE CRAFT: SYSTEMS

SUGGESTED RESOURCES

Briggs and Stratton Power Equipment
Harley Davidson Motorcycle Company
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